

SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT
YEARLY MEETING JUNE 1971

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MEMORANDUM

TO: Board of Directors

DATE: April 30, 1971

FROM: General Manager

Attached, for your information, is a copy of a staff paper entitled "Analysis of the Recommendations of the Golden Gate Bridge, Highway and Transportation District for Transit Improvements in the Golden Gate Corridor".


ANALYSIS OF THE RECOMMENDATIONS
OF THE GOLDEN GATE BRIDGE,
HIGHWAY AND TRANSPORTATION DISTRICT
FOR TRANSIT IMPROVEMENTS IN
THE GOLDEN GATE CORRIDOR

Prepared by the
BART Office of Planning
April 23, 1971

1) The Bridge District notes that selection of a San Francisco corridor will require additional study, as will other aspects of the Bridge District's recommendations. BART staff concurs that additional planning and review are needed in order to sort out unanswered questions relative to finance, the possibility of jointly serving San Francisco and Marin County, and in relating the alternative transit system improvements to both local and regional development goals.

2) One of the alternatives considered by the Bridge District is a "fixed guideway" system out Geary Street, across the Golden Gate Bridge, and north to Novato. This alternative resembles very closely the BART proposal that had to be abandoned in 1962 because the Bridge District precluded use of the bridge for a transit line. The Bridge District did not re-evaluate the possibility of using the bridge for BART trains, however. This alternative is still the only alternative which would provide significant transit service to San Francisco.

3) The Bridge District is restrained by the apparent lack of funds, similar to anyone else wishing to make significant transit improvements. It may be that this has unduly affected the Bridge District's recommendations. In any case, the Golden Gate Corridor financial dilemma lends additional weight to the need to make major changes in transportation finances at both the State and Federal levels.


R. R. Stokes

BRS/kcf
attachment

SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT

M E M O R A N D U M

TO: Board of Directors

DATE: April 30, 1971

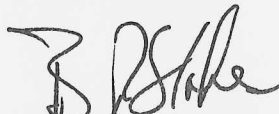
FROM: General Manager

Attached, for your information, is a copy of a staff paper entitled "Analysis of the Recommendations of the Golden Gate Bridge, Highway and Transportation District for Transit Improvements in the Golden Gate Corridor."

This paper provides an analysis of the recommendations which the Bridge District submitted to the State Legislature April 3 in response to Chapter 805 of the Statutes of 1969.

There are three findings of particular significance which I would like to call to your attention:

- 1) The Bridge District notes that selection of a San Francisco corridor will require additional study, as will other aspects of the Bridge District's recommendations. BART staff concurs that additional planning and review are needed in order to sort out unanswered questions relative to finance, the possibility of jointly serving San Francisco and Marin County, and in relating the alternative transit system improvements to both local and regional development goals.
- 2) One of the alternatives considered by the Bridge District is a "fixed guideway" system out Geary Street, across the Golden Gate Bridge, and north to Novato. This alternative resembles very closely the BART proposal that had to be abandoned in 1962 because the Bridge District precluded use of the bridge for a transit line. The Bridge District did not re-evaluate the possibility of using the bridge for BART trains, however. This alternative is still the only alternative which would provide significant transit service to San Francisco.
- 3) The Bridge District is restrained by the apparent lack of funds, similar to anyone else wishing to make significant transit improvements. It may be that this has unduly affected the Bridge District's recommendations. In any case, the Golden Gate Corridor financial dilemma lends additional weight to the need to make major changes in transportation finance at both the State and Federal levels.


B. R. Stokes

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ANALYSIS OF THE RECOMMENDATIONS
OF GOLDEN GATE BRIDGE,
HIGHWAY AND TRANSPORTATION DISTRICT
FOR TRANSIT IMPROVEMENTS IN
THE GOLDEN GATE CORRIDOR

A Paper Prepared for the
San Francisco Bay Area Rapid
Transit District Board of Directors

By the

BART Office of Planning

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Alternative Plans Developed by Golden Gate
Bridge, Highway & Transportation District

ATTACHMENT 2

Interim Bus and Ferry System

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ANALYSIS OF THE RECOMMENDATIONS
OF GOLDEN GATE BRIDGE,
HIGHWAY AND TRANSPORTATION DISTRICT
FOR TRANSIT IMPROVEMENTS IN
THE GOLDEN GATE CORRIDOR

The Golden Gate Bridge, Highway and Transportation District has presented its recommendations for providing transit in the Golden Gate Corridor to the State Legislature in accordance with Chapter 805 of the Statutes of 1969 which directed the Bridge District to prepare a long-range transit plan and to define the future responsibility of the Bridge District for providing transportation services. Copies of that report were sent to BART April 9.

BART staff recommends further analysis before the specific recommendations of the Bridge District are endorsed or implemented. The financial impact, selection of a specific route and system, and the relationship of the transit system to development in San Francisco, Marin County, and the Bay Area all need additional consideration.

The purpose of this paper is to outline: 1) the specific recommendations of the Bridge District; 2) the financial implications; 3) the relationship of the recommendations to regional development; and 4) the relationship of the recommendations to the need for transit service improvements in San Francisco's northwest corridor.

Attached are fiscal tables from the Bridge District's legislative report (Attachment 1), a summary of the various alternatives which were reviewed by the Bridge District (Attachment 2), and a summary of the interim transit improvements being undertaken by the Bridge District (Attachment 3).

RECOMMENDATIONS OF THE GOLDEN GATE BRIDGE, HIGHWAY AND
TRANSPORTATION DISTRICT

The Bridge District recommended that it should continue as the "sub-regional agency responsible for coordinated development and management of a multi-modal balanced public transportation system in the Golden Gate Corridor." It recommended development of the following program for serving Marin commuters:

- A. Develop a transit right-of-way which is adaptable to both buses and a "fixed guideway."
- B. Use buses as the primary initial system.
- C. Undertake the capital projects with the following priority:
 1. Construct an underground San Francisco busway, the route yet to be determined, to be completed by 1976. Cost: \$204 million.
 2. Develop and purchase turbo-electric bus system. Cost: \$30 million.
 3. Construct an exclusive reversible bus lane on Waldo Grade. Cost: \$0.6 million, and a second deck for transit on the Golden Gate Bridge. Cost: \$66.5 million.
 4. Make miscellaneous right-of-way improvements for buses in Marin County.

The total cost of the projects listed above (except for Marin County right-of-way improvements for which no figure is given) is \$301.5 million to be expended through 1980. Most of this is scheduled to be spent by 1976. The Bridge District has undertaken a \$30 million capital improvement program related to its interim transit improvements including \$10 million for the optimum bus system and \$20 million for the ferry system.

In addition to the capital improvement cost of the long-range plan and the bus and ferry systems, the Bridge District contemplates spending \$18.6 million to subsidize interim transit services, \$17.6 million for new improvements and repairs to the Bridge, and \$58.7 million in on-going maintenance and operation of the Bridge in the next ten years.

The Bridge District recommends that it is best suited to implement these improvements in the Golden Gate Corridor because of its past performance record and its ability to use the Bridge to provide revenue and a measure of control over the automobile. In the report to the Legislature, the Bridge District briefly explored alternate institutional arrangements. In so doing, the Bridge District acknowledged BART's competence in rapid transit. On the other hand, the Bridge District pointed out the extent to which San Francisco is bonded in order to support construction of the existing BART system; and the Bridge District suggested that, as a result, BART participation in the Golden Gate Corridor solution might "place a difficult financial burden on Marin, Sonoma, and other counties for new construction." The Bridge District suggests further that BART "buy-in" policies present a "serious political and financial obstacle."

FINANCIAL IMPLICATIONS

The financing scheme is critical. The total of all expenditures by the Bridge District during the next five years would be approximately \$350 million; and in ten years, \$427 million. Based

on existing tolls, the Bridge District would require \$318 million from new sources to meet this commitment.

The Bridge District assumes \$220.7 million in Federal Grants. The recently-enacted Urban Mass Transportation Assistance Act calls for a total commitment of \$3.1 billion for transit through 1976. If federal appropriations amount to \$3.1 billion in the period, the California share will be limited to approximately \$450 million. Thus, the Bridge District would have to receive nearly one half of California's expected share of federal funds during the next five years in order to achieve the financial goal. Only if significant new federal programs such as the Nixon Administration revenue sharing proposal are enacted, might federal funds for transit be increased and thus improve this relationship.

But there are many other projects in the Bay Area which will have claims to a portion of these funds, such as AC Transit and SF Muni capital improvements, BART's first priority extensions and transit connections to the Oakland and San Francisco Airports. It is apparent, therefore, that the Golden Gate Bridge, Highway and Transportation District plans are interdependent with those of the other transit agencies in the Bay Area.

While it is true that the financing scheme for the Bridge District's recommendations is critical, so are the financing schemes for all transit projects. In fact, one of the weaknesses of transit planning is the limited financial horizon which restrains the selection of transit systems. Several years ago, the City of

San Francisco and the State Division of Highways considered freeway solutions for the Golden Gate Corridor which surely would cost at least as much as the most expensive of the alternatives examined by the Bridge District. These freeway plans were not implemented because San Francisco and Marin County were unwilling to commit themselves to further freeway development.

The relative ease of garnering highway dollars, however, offered confidence that if Marin County and San Francisco would have agreed to a freeway solution, the substantial funds required would be forthcoming.

But because San Francisco and Marin County have expressed preference for a transit solution, the financial feasibility becomes a limiting constraint. Thus, it does not appear to be just coincidence that the least expensive plan of the alternatives studied was recommended by the Bridge District, although it has yet to demonstrate that this conclusion leads to the best long-range plan. Further evidence of how financial inhibitions affect choices may be inferred from the engineering consultant's observation that the busway is superior to rail transit because highway funds can be used for a bus system whereas highway funds cannot be used for a possibly better form of transit.

The main point to be made is that in developing a long-range plan for a corridor such as the Golden Gate, those who are preparing and advocating transportation plans should also advocate the elimination of financial barriers between transit and highway funding so that the recommended solution, whether highways or transit, can be implemented.

RELATIONSHIP OF THE BRIDGE DISTRICT PROPOSAL TO REGIONAL DEVELOPMENT

Before preparing recommendations, the Bridge District carried out a study which developed five alternative systems and alignments for serving Marin County and San Francisco. Three of the schemes would provide rail rapid transit from San Francisco to Marin County, one via the Bridge and the other two in a subaqueous tube; one scheme provides for an exclusive busway which would be underground in San Francisco; and the fifth scheme combines the exclusive busway with an extension of BART from Richmond to San Rafael and north. A sixth scheme to provide only the interim bus and ferry services now being implemented was discussed and rejected as being unable to meet the needs beyond 1980. Attachment 3 contains a summary description of these alternatives.

In developing and considering these five alternatives, the Bridge District engaged Kaiser Engineers to prepare an Engineering Report, and Okamoto/Liskamm to prepare an Urban Planning Report. In addition, the Bridge District engaged a financial consultant and a public relations consultant to assist in developing the conclusions drawn in the April 3, 1971 report to the Legislature.

The most significant aspect of the alternative plans prepared for the Golden Gate Corridor Study is the varying developmental implications which they have for San Francisco, Marin County and the region. These issues are complex and led to considerable discussion, but little consensus. For this reason alone, additional time will be required so that these plans can be made part of a regional strategy for transit development.

The Bridge District did make an effort to begin a discussion of these development issues. A Technical Advisory Committee and a Citizen's Advisory Panel were given an opportunity to be advised and to make input periodically through the course of the project. BART was asked to participate as one member of the Technical Advisory Committee during the early stages of the study, and BART staff observed many of the Citizen's Advisory Panel sessions. Finally, the Bridge District held a series of public meetings for the purpose of presenting the studies. The results of these hearings, and of the input by the Citizen's Advisory Panel, support the conclusion that additional time is required to arrive at definitive recommendations regarding a long-range plan for the Golden Gate Corridor.

In Marin County growth is a key issue. Marin County has grown at a lesser rate than the rest of the region, partly because of its relative inaccessability to employment centers in the region. Therefore, Marin County is potentially quite sensitive to transportation improvements. Patronage and revenue estimates prepared by the engineering consultant are based on a single set of population and employment figures which were developed by the Bay Area Transportation Study (BATS). The 1990 population for Marin under this assumption is 404,000; nearly double the existing 204,000 population. These projections do not consider the impact of growth resulting from transit planning or a more restricted highway access to Marin County.

Alternate projections prepared by Okamoto/Liskamm, assuming no increases in peak period auto capacity, show significantly less growth than projected by BATS and Kaiser Engineers. They also show that the provision of rapid transit can induce growth. For example, without transit, the Okamoto/Liskamm projections for 1990 are 242,000 people, a 21% increase; and with rapid transit, 317,000, a 57% increase.

Because of the apparent sensitivity of Marin County to transportation-induced growth and because growth and development are critical issues to Marin County's future, far more attention should be given to this issue. In the short time the Bridge District has had to work, it could do little more than identify the issue. The question of how much transit, and where, has not been resolved for Marin County.

Alternative routings in San Francisco have also identified areas of the city which are sensitive to transit-induced growth; for example, the potentially adverse impact of transit-induced growth in the Columbus Avenue corridor. The Bridge District was not able to resolve this issue either, and as a result is proposing an additional study to determine the proper corridor for the proposed bus subway.

RELATIONSHIP OF BRIDGE DISTRICT PROPOSALS TO THE NEED FOR
TRANSIT IMPROVEMENTS IN SAN FRANCISCO'S NORTHWEST CORRIDOR

The Bridge District proposes to construct a bus subway in San Francisco, but it has not selected a route. The route recommended by the engineering consultants follows the Marina and

Columbus Avenue corridor. However, this route might have an adverse impact on this corridor because of the pressures for development around stations located in an area where such development is opposed both by neighborhood groups and existing city policy. It is possible that a northwest corridor route in San Francisco could provide improved transit services for both Marin County and San Francisco. However, the demand and performance criteria of a combined route may not be satisfied by a bus system. The Bridge District engineering consultants considered this possibility in a post-hearing analysis. The following excerpt from that analysis states that direct routing via the Marina-Columbus Avenue corridor:

. . . provides little benefit to San Francisco residents and the route in the Geary-Post Corridor has been suggested as a means to provide service within the city of San Francisco as well. Such a route is less desirable than a direct route for the following reasons:

- 1) San Francisco needs, and has future plans for, a Muni or BART rapid transit line in this corridor; a separate line would provide better service to San Francisco and would avoid a combined "compromise" line which, by reducing the level of service to Marin, would not give the best service to either San Francisco or Marin; and,
- 2) There is some doubt that a satisfactory combined service could be operated in a Geary-Post Street subway; local (MUNI) buses would operate with frequent stops and would conflict with the express buses from Marin.

Thus while the Bridge District recommends additional analysis in order to determine the best corridor, the consulting engineers have suggested that the northwest corridor is inadequate for Marin County commuters.

Rapid transit in the northwest corridor of San Francisco has been a goal of the City and of BART for some time, however.

The City Planning Department stated before the joint Streets and Transportation, and Planning and Development Committees of the San Francisco Board of Supervisors its opposition to the Bridge District's bus scheme. The Planning Department indicated it continues to support a rail rapid transit system serving the northwest section of San Francisco and Marin County.

The five-county plan prepared by BART in 1962 would have provided for rail transit in this corridor. However, because of a ruling by the Bridge District that the bridge could not support BART, Marin County was forced to drop out of the BART District. The Bridge District study did not re-examine this issue.

There is still a need for rapid transit serving northwest San Francisco, and the BART Board of Directors has directed its staff to undertake an investigation of this corridor beginning no later than the first quarter of the 1971-72 fiscal year. In accordance with this direction, BART staff has prepared a preliminary work program and is working with the Metropolitan Transportation Commission (MTC) to obtain a federal technical studies grant for this corridor. We have been given tentative assurance by the U.S. Department of Transportation that it will finance two-thirds of the cost of this plan.

The results of this planning could have a significant impact on the Bridge District Plan. The Marin County system might be integrated with a system to serve the transit needs of San

Francisco. Such a system could perhaps provide a more efficient utilization of fiscal resources and be less disruptive to San Francisco than attempting to build an underground system serving only Marin County commuters. It is also possible that a rapid transit system could be built to serve San Francisco and a less intensive system implemented to serve Marin County. Such a plan may, in fact, be most compatible with the development goals of San Francisco, Marin County -- particularly southern Marin County -- and the region.

CONCLUSIONS

The Golden Gate Bridge, Highway and Transportation District should be commended for the studies which it has begun and for the commitment to use Bridge pricing and revenues to improve transportation. The Bridge District study, and the development of the five alternatives, are particularly useful in highlighting the complex issues and development options to be resolved in building an effective, modern transit system. The most significant accomplishment of the Bridge District is the extent to which it has drawn attention to the alternative development goals for the Golden Gate Corridor. The final recommendation to improve transit service must be tailored to encourage the preferred development goals.

The specific recommendation to provide a transit deck on the Golden Gate Bridge and build a bus subway in San Francisco is premature based on the analysis to date. The Bridge District

should be encouraged to continue its work analyzing the Golden Gate Corridor development goals and defining a transit system to serve these goals.

The development of a rapid transit system in the north-west corridor of San Francisco by BART could have a significant impact on the Bridge District plans, particularly if the Bridge District finds that a bus subway following the Marina Route is neither desirable nor feasible. At that point, BART, the Bridge District, MTC, and the several key agencies in San Francisco will have to seek the best way of merging the systems.

In the meantime, both the Bridge District and BART must strongly advocate the needed changes at the State and Federal level which will make it possible to build each recommended link in the region's transportation system.

Attachments

ATTACHMENT 1

RELATION OF DISBURSEMENTS TO PROJECTED REVENUES(1)
(Millions of Dollars)

	1971-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79	79-80	Total
Projected Disbursements	31.4	29.8	80.0	120.5	88.8	36.2	12.3	13.7	14.0	426.7
Projected Future Sources of Funds	23.5	20.6	55.1	81.1	63.1	28.0	10.3	12.9	13.2	307.8
From Bridge (2)	4.0	4.4	14.4							
Reserves										
Additional Funds Required	0.0	0.0	19.2	39.4	25.7	8.2	2.0	0.8	0.8	96.1
Total Additional Funds Required:	96.1 million through 1980									

(1) Revenue and disbursement figures assume that bus transit systems in full operation will be "break even" operations. Reference: "Optimum Bus System," Marin County Transit District, August, 1969; "Golden Gate Corridor Long Range Transportation Alternatives, Engineering Report," Kaiser Engineers, December, 1970.

(2) Bridge reserve at end of 70-71 fiscal year, \$22.8 million.

ATTACHMENT 1

PROJECTED FUTURE SOURCES OF FUNDS
(Millions of Dollars)

	1971-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79	79-80	TOTAL
Bridge Tolls	9.0	8.6	8.8	9.2	9.4	9.7	10.0	10.3	10.6	85.6
Federal Grants (1)	14.2	11.8	46.2	72.5	53.4	18.0	0.0	2.3	2.3	220.7
Division of Highways (2)	0.2	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.6
Marin Transit District	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.9
TOTAL	23.5	20.6	55.1	81.1	63.1	28.0	10.3	12.9	13.2	307.8

(1) Assumes two-thirds funding from Federal Government

(2) Assumes Division of Highways participation in costs of reverse-lane modifications on Waldo approach.

ATTACHMENT 1

PROJECTED DISBURSEMENTS OF FUNDS
(Millions of Dollars)

	1971-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79	79-80	TOTAL
<u>Bridge Repairs</u>	2.1	2.3	2.5	3.2	0.0	0.0	2.7	0.0	0.0	12.8
<u>Bridge Improvements</u>	2.9	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1
<u>Bridge Maintenance</u>										
<u>and Operating Expenses</u>	4.8	5.2	5.8	6.1	6.5	6.9	7.3	7.8	8.3	58.7
<u>Bus System Capital</u>										
<u>Costs & Depreciation</u>	10.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	18.0
<u>Ferry System Capital</u>										
<u>Costs and Subsidy</u>	10.2	11.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	30.6
<u>Rapid Transit</u>										
<u>Capital Costs</u>	1.4	7.8	69.4	108.9	80.0	27.0	0.0	3.6	3.4	301.5
<u>TOTAL</u>	31.4	29.8	80.0	120.5	88.8	36.2	12.3	13.7	14.0	426.7

ATTACHMENT 2

ALTERNATIVE PLANS DEVELOPED BY
GOLDEN GATE BRIDGE, HIGHWAY & TRANSPORTATION DISTRICT

The Consultants for the Bridge District, Kaiser Engineers and Okamoto/Liskamm, Inc., prepared five alternative schemes for providing transit to Marin County. Three of the schemes would provide rail rapid transit from San Francisco to Marin County, one via the bridge and the other two in a subaqueous tube; one scheme is for an exclusive busway, underground in San Francisco; and the last scheme combines the exclusive busway with an extension of BART from Richmond to San Rafael and north. A sixth scheme to provide only bus and ferry service as proposed by the existing Bridge District plans was also discussed, but dismissed by the consultants as being inadequate to meet the engineering and environmental criteria beyond 1980. Each alternative was paired with either a "minimum" or "moderate" highway network.

The "minimum highway network" includes State Highway 1 in Marin County reconstructed to four lanes, Route 101 as the only 8-lane north-south freeway in Marin County, and a Golden Gate Parkway in San Francisco connecting the Embarcadero Freeway with the Golden Gate Bridge approaches. The "moderate highway network" which includes State Highway 1 reconstructed to four lanes; an eight-lane freeway extension of State Highway 17 through San Rafael reducing to a four-lane highway near Point Reyes Station; a six-lane extension of State Highway 37 through Hicks Valley from Novato to new State Highway 17; a second auto deck of the Golden Gate Bridge; and a Golden Gate Freeway in San Francisco.

These alternatives were presented to the public in several open hearings. A summary of each alternative follows.

ALTERNATIVE 1: A "fixed guideway transit" is envisioned on exclusive right-of-way beginning at Post and Market Streets in San Francisco, then in subway out the Geary Corridor to Park Presidio, north over a lower deck of the bridge to Sausalito, and continuing generally by way of the Northwestern Pacific right-of-way to a terminus in Novato. This alternative is coupled with a "minimum highway network." The present value of the total capital cost is \$716 million.

This route is generally the same as the one developed for the Bay Area Rapid Transit District Five County Plan in 1962. The Bridge District, however, did not make a determination regarding what system would be used; and it consistently refers to a "fixed guideway transit." The Bridge District has not made an effort to determine how the bridge would have to be modified in order to accommodate a BART system.

This is the only alternative to offer significant transit service for San Francisco. It would serve the greatest number of people and would have the highest patronage. The City Planning Department has recommended this alternative.

While BART quality service is desirable to serve the Geary-Post Corridor, such service may not be required to serve southern Marin. A rapid transit system might be designed to serve the northwest corridor of San Francisco with a less intensive system serving southern Marin. This question deserves further exploration.

ALTERNATIVE 2: This alternative includes a "fixed guideway transit" on exclusive right-of-way beginning at Kearny and Market Streets in San Francisco, in subway along Kearny and Columbus to Aquatic Park, in a subaqueous tube under the Bay to Sausalito, and then along the same alignment as Alternative 1. This alternative is coupled with both a minimum and maximum highway network. The present value of the total capital cost is approximately \$690 million.

This is the most direct route to downtown San Francisco. The consultants estimate that it may be as much as 10 minutes faster for Marin commuters traveling to downtown San Francisco compared to Alternative 1. The plan provides only minimal transit service for San Francisco. Thus, capital cost is lower partly because Alternative 2 has six fewer stations in San Francisco than Alternative 1.

This plan is, to an extent, detrimental to San Francisco because it would cause both disruption and development pressures in an area where it is not desired by the City. When coupled with the "moderate highway network," the plan is even more disruptive to San Francisco because the role of transit is weakened and the development pressures are increased in Marin County.

ALTERNATIVE 3: A bus rapid transit on exclusive right-of-way is proposed. It begins at Montgomery and Post Streets in San Francisco, runs in subway under Kearny and Columbus, west under Beach Street, Fort Mason and Marina Blvd., surfaces at the Presidio, is carried over a second deck of the Bridge, follows an exclusive right-of-way along Route 101 to a point north of Route 1 interchange where it joins the Northwestern Pacific right-of-way and continues to Novato. This

system is coupled with a "minimum highway network." The total capital cost, present value, is \$372 million.

The capital cost of this alternative is relatively low for four reasons: First, as Alternative 2, it does not serve the northwest corridor of San Francisco. Second, this system is proposed based on the assumption that a dual-power bus vehicle which would operate under electric power in the subway portions can be developed. This assumption is necessary in order to avoid the need for extensive and expensive ventilation.

Third, the consultants propose that the bus right-of-way be designed to meet bus criteria only, and not be convertible to rail rapid transit. However, the Bridge District recommended in their report to the Legislature that the tunnels be made compatible with rail transit. This would increase the capital cost. Finally, total cost must be considered. Although heavy emphasis has been placed on capital construction costs, any savings in capital costs might be offset by the high variable operating costs of the labor intensive bus system.

The third alternative shares some of the disadvantages of the second alternative; that is, it would cause disruption and development pressures in parts of San Francisco where such pressures are being discouraged. Further, it does not provide for significantly improved transit service for the benefit of San Francisco.

In addition, the Bridge District consultant engineers have suggested that the San Francisco busway could be developed as part of the Golden Gate Expressway connecting the Bay Bridge and the Golden Gate Bridge, and the consultants have suggested that the second deck on the bridge might be used to increase the capacity of the bridge to serve weekend automobile traffic. The difficulty is that the Golden

Gate Expressway and use of the second deck for automobiles is opposed to by many of the groups that are supporting the implementation of improved transit service in the corridor.

Further, if funds are available to construct the expressway and to modify the second deck in order to make it possible to have automobile access, another question is raised. Will these automobile improvements be of higher priority than additional transit improvements? The significance of this question of financing priority is touched upon in the body of this report.

The bus scheme has another potential weakness which should be considered. The bus plan includes the provision for collecting patrons in their neighborhoods as a feeder bus prior to joining the exclusive right-of-way to provide trunkline service. This kind of operational plan tends to encourage the same kind of urban sprawl that the automobile-dominated system encourages. A rapid transit system which requires that feeder service be independent of trunkline service requires the location of stations to facilitate the transfer between systems. These station locations can, and should be, sited to induce development where development is desired. This transportation concept, therefore, helps to design and control where development will occur. The fact that the bus plan does not do this might be thought of as a disadvantage.

ALTERNATIVE 4: This alternative would have a fixed guideway transit system with an alignment identical to that of Alternative 2 from San Francisco to Mill Valley. At Mill Valley, however, the line swings west generally along the old railway right-of-way into Corte Madera,

Larkspur, Kentfield and Ross to San Anselmo. North of San Anselmo, the line enters a long tunnel leading to a joining of the Alternative 2 alignment again just north of the Marin Civic Center. The fourth alternative is considered in combination with the "moderate highway network." The estimated present value of the capital cost is \$696 million.

This route is not desired by the communities uniquely served by it.

ALTERNATIVE 5: An exclusive busway identical to that described in Alternative 3 except terminating in San Rafael and an extension of BART from Richmond to San Rafael and north to Novato are combined to form the fifth alternative. This plan is coupled with the "minimum highway network." The present value of the capital cost is \$692 million.

This plan was originally designed to provide a distinct development alternative to the other four. The reason for this alternative is to test whether growth and development can be directed away from the more ecologically sensitive southern Marin County towards northern Marin County, and whether or not this growth could encourage job centers other than downtown San Francisco. This is one of the regional goals that has been adopted by the Association of Bay Area Governments.

However, by including the exclusive busway between San Rafael and San Francisco, the object of the test has been thwarted. The exclusive busway system was added at the request of the San Francisco members of the Board of Directors because of the opposition by the City to the use of buses from Marin County on San Francisco city streets.

Nevertheless, this alternative has significant long-range regional implications. It needs additional exploration, particularly in conjunction with the development of the ABAG plan and MTC program. The formulation of this alternative highlights the absolute necessity of achieving a regional prospective with regard to a transit development program. The Golden Gate Corridor cannot be viewed and studied in isolation.

The Bridge District is seeking federal funds to purchase approximately 152 vehicles to implement this scheme at a cost of approximately \$10 million, and they anticipate an annual subsidy of approximately \$1 million.

As reported to the Legislature, the Bridge Board of Directors had authorized the implementation of a ferry system serving Sausalito and central Marin County -- three ferries to serve central Marin; and one ferry, in addition to the one already in service, to serve Sausalito. The Bridge District expects to have specifications for the ferries completed by May, 1971.

On April 9, the Bridge Board approved filing for a federal capital grant to purchase six ferries. The total cost of the interim ferry scheme is approximately \$20 million. A \$1.3 million estimated annual subsidy is envisioned.

ATTACHMENT 3

INTERIM BUS AND FERRY SYSTEM

The Board of Directors of the Bridge District has already authorized the implementation of an interim bus and ferry system. The bus system is based on the "Optimum Bus System" developed by the Marin County Transit District in 1969. The system will replace the existing Greyhound service and will provide for bus service from Marin and Sonoma communities via U.S. Highway 101 and terminating in the San Francisco Financial District and Civic Center.

The Bridge District is seeking federal funds to purchase approximately 152 buses to implement this scheme at a cost of approximately \$10 million, and they anticipate an annual subsidy of approximately \$1 million.

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